Peculiarities in fatigue- ...

$K = \frac{\sigma_{-1(e)}}{\sigma_{-1(e=0)}} 100\ \%$, where $\sigma_{-1(e)}$ fatigue strength limit of samples submitted previously to elongation - e %, $\sigma_{-1(e=0)}$ - fatigue limit of samples not submitted to deformation. The coefficient K may be approximately expressed as follows: $K = a \cdot 10^{\alpha e} + b \cdot 10^{-\beta e}$. The value of parameters a, α, b, β, for the tested steels are given in a Table. The experimental results are given in Fig. 1, in which curves denoting the dependence of K on the amount of previous elongation are drawn. It is seen that all these curves show a marked minimum in the region of relatively small plastic deformations, the fatigue strength rising with further increase in elongation. In the author's opinion, statements often found in literature, that the fatigue strength increases constantly with the increase in previous elongation, did not take into account the region of small deformations, therefore, not giving a full picture of this dependence. The author suggests a theoretical explanation for this pheno-

Card 2/6

Peculiarities in fatigue- ...

menon, based mostly on previous publications of Western investigators. He discusses three main factors: a) Variations in the theoretical static tensile strength of steels, due to lattice structure or close-packing defects which increase proportionally to plastic deformation; b) Residual stresses from the process of samples manufacturing, which may decrease during plastic deformation; these stresses are called by the author σ_I; c) Residual oriented micro stresses arising during sample plastic deformation, called by him σ_{II}. These stresses oriented towards the deformation axis may be summarized with stresses σ_I, giving a maximum in the region of small elongations. If a curve is drawn, representing the resultant of all these stresses its characteristics would be similar to those drawn from experimental results. But, adds the author, there might be other causes as well, such as the rate of plastic deformation, the properties of the surface area, the development of surface defects, taking into account the Rebinder effect, and some other factors. There are 1 table, 2 figures, and 11 references:

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26757
S/021/60/000/011/005/009
D204/D302

Peculiarities in fatigue- ...

8 Soviet-bloc and 3 non-Soviet-bloc. The references to English-language publications read as follows: J.H. Hollomon and C. Zener, Journ. of Appl. Physics, 17, 2, 82, 1946; W.A. Wood and S.L.Smith, J. Inst. of Metals, 67, 315, 1941; E.A. Owen, Y.H. Liu, P.H. and D.P. Morris, Phil. Mag. 39, 298, 831, 1948.

ASSOCIATION: Institut mekhaniki AN URSR (Institute of Mechanics, AS USSR)

PRESENTED: by F.P. Byelyankin, Member of Academy of Sciences UkrSSR

SUBMITTED: July 16, 1960

Card 4/6

S/021/61/000/002/008/013
D210/D303

AUTHOR: Chernyak, M.I.

TITLE: On the effect of plastic stretching on the fatigue characteristics of heat-resistant alloys

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 2, 1961, 173 - 175

TEXT: Results are given of investigating the fatigue limit of test specimens made from previously stretched bars; apart from the influence of the deformation of stretching, there was also that of mechanical working during preparation of specimens. To eliminate the latter factor, some of the specimens were not treated in any way after stretching. The fatigue tests ($N = 10^8$ cycles) [Abstractor's note: N not defined] were carried out on specimens ($d = 8$ mm) of two alloys on nickel basis (I and II) [Abstractor's note: Composition not given] under the conditions of pure bending with twisting (frequency 100 cycles) at 20° and 700°C. The basic results

Card 1/2

On the effect of plastic ...

for alloys I and II are given in tabulated form. A graphic representation of the same data is given. There are 1 figure, 2 tables, and 4 Soviet-bloc references.

ASSOCIATION: Instytut mekhaniky AN URSR (Institute of Mechanics AS UkrSSR)

PRESENTED: by Academician AS UkrSSR, F.P. Belyankin

SUBMITTED: June 16, 1960

Card 2/2

18.8200

29187
S/020/60/000/010/009/016
D251/D303

AUTHOR: Chernyak, M.I.

TITLE: On some properties of the tension diagram of metals in the range of small elastic-plastic deformations

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 10, 1961, 1364 - 1368

TEXT: The deformation characteristics under tension depend on certain parameters: 1) With variable length, a) elongation $e = \ln \frac{l_k}{l_0}$, (1a); b) intensity of deformation $e_i = \frac{2}{3}(1 + \mu)e$, (1b); 2) With variable cross-section, a) concentration $e_i = \ln(F_0/F_k)$, (2a); and b) transverse deformation $e_2 = \ln \frac{d_k}{d_0}$, (2b). In certain cases the deformation e_1 really gives the corresponding elongation

Card 1/3

e. In this case

$$e_1 = e, \ (3); \qquad e_1 = -2e_2, \ (4); \qquad e_i = e, \ (7).$$

The dimensionless function of deformation and its derivative then have the form

$$\omega = 1 - \frac{\sigma}{Ee}, \tag{5}$$

and

$$\omega' = \frac{d\omega}{de} = \frac{1}{Ee}\left(\frac{\sigma}{e} - \frac{d\sigma}{de}\right) \tag{6}$$

and similarly for ω_i, ω_1 and ω_i', ω_1'. It is shown, however, that in the range of small elastic-plastic deformations, the coefficient of transverse deformation varies considerably with the magnitude of deformation. Hence considerable differences may arise between the deformation parameters and application of the approximate relationships may give rise to considerable error. This is of considerable importance when derivatives of the tension diagram with respect to the deformation parameters or the dimensionless deforma-

Card 2/3

On some properties of the ...

tion functions are used. There are 4 figures and 4 Soviet-bloc references.

ASSOCIATION: Instytut mekhaniky AN URSR (Institute of Mechanics AS UkrSSR)

PRESENTED: by F.P. Byelyankin, Academician AS UkrSSR

SUBMITTED: April 30, 1960

Card 3/3

CHERNYAK, M.I., kand. tekhn. nauk

Precision glass tubes and shells. Stek. i ker. 22 no.11:15-19 N '65. (MIRA 18:11)

CHERNYAK, M.M. (Moskva)

Experience with ideological political education at the school for nurses and feldshers of the S.P.Botkin Hospital. Med. sestra, no.9: 22-26 S '54. (MLRA 7:9)

(EDUCATION, MEDICAL,
in Russia, ideol. aspects in schools for nurses & feldshers)
(NURSING PROFESSION, education,
Russia, ideol. aspects)

CHERNYAK, M. S.

Chernyak, M. G. and Aslanova, M. S. - "The experience gained in obtaining stained fiber and colored fabric from glass," In the symposium: Fiz.-tekhn. svoystva i primeneniye steklovoloknistykh materialov, Moscow-Leningrad, 1949, p. 117-23

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949)

SISAKYAN, N.M.:CHERNYAK, M.S.

Nucleic acids in plastids. Doklady Akad. nauk SSSR 87 no. 3:469-470 21 Nov 1952. (CIML 23:5)

1. Presented by Academician A. I. Oparin 4 September 1952.

ACC NR: AP7000011 SOURCE CODE: UR/0076/66/040/011/2899/2900

AUTHOR: Yantovskiy, S. A.; Chernyak, M. V.

ORG: GIAP

TITLE: Concentration range of the explosiveness of hydrogen-oxygen mixtures at pressures above atmospheric

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 11, 1966, 2899-2900

TOPIC TAGS: chemical explosion, hydrogen, oxygen

ABSTRACT: The effect of pressure on the concentration range of hydrogen-oxygen mixtures was studied at pressures up to 20 atm. Analysis of the reaction products showed a partial consumption of oxygen at the upper limit of the concentration range of explosiveness (in the presence of excess hydrogen) and a partial consumption of hydrogen (in the presence of oxygen) at the lower limit. This incomplete combustion was observed at all the pressures studied. The concentration range of explosiveness at pressures above atmospheric is defined by mixtures containing 4.5% H_2 at the lower limit and 95.5% H_2 at the higher limit; preignition combustion is observed in these mixtures. The pressure dependence of the lower and upper limit follows the expression c_p^{-n} = const, where c = 4.5 and 95.5% for the lower and upper limit respectively, p is the pressure in atm, and n is the pressure index (~0). The concentration limit can be represented as the result of the following elementary steps: at the lower limit

Card 1/2 UDC: 541.126

ACC NR: AP7000011

$$\begin{aligned} OH + H + O_2 &\longrightarrow H_2O + O_2, \\ H + O_2 + H_2O &\longrightarrow HO_2 + H_2O \\ HO_2 + OH &\longrightarrow H_2O + O_2, \end{aligned}$$

and at the upper limit

$$\begin{aligned} H + H + H_2 &\longrightarrow H_2 + H_2 \\ H + OH + H_2 &\longrightarrow H_2O + H_2 \\ HO_2 + H &\longrightarrow H_2 + O_2 \end{aligned}$$

Orig. art. has: 1 figure and 1 table.

SUB CODE: 07/ SUBM DATE: 18Feb66/ ORIG REF: 001/ OTH REF: 002

Card 2/2

Chernyak, M.Ya.

IONAS, Boris Yakovlevich; GUREVICH, M.S., red.; IL'IN, V.M., red.; LEYKIN, B.P., red.; MASLOV, N.A., red.; USPENSKIY, V.V., red.; CHERNYAK, M.Ya., red.; EL'KINA, E.M., tekhn.red.

[Basic aspects of the economics of construction; based on the experience and examples of housing construction] Osnovnye voprosy ekonomiki stroitel'stva; na opyte i primerakh zhilishchnogo stroitel'stva. Izd. 2-e, dop. Moskva, Gos. izd-vo lit-ry po stroit. i arkhit., 1957. 91 p. (MIRA 11:3)
(Construction industry)

LYUBIMOVA, Margarita Saadiyevna; USPENSKIY, V.V., red.; IL'IN, V.M., red.; MALYUGIN, V.I., red.; MASLOV, N.A., red.; CHERNYAK, M.Ya., red.; SHASS, M.Ye., red.; TEYYERMAN, T.M., tekhn. red.

[Economic efficiency of reducing the number of standard sizes of precast construction elements; based on the production of large slag concrete wall blocks] Ekonomicheskaia effektivnost' sokrashcheniia kolichestva tiporazmerov sbornykh detalei; na primere proizvodstva krupnykh stenovykh shlako-betonnykh blokov. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1958. 43 p. (MIRA 11:12)
(Concrete blocks--Standards)

BUKSHTEYN, David Il'ich,; YEFREMOV, Sergey Andreyevich,; MALYUGIN, V.I.,red.; IL'IN, V.M.,red.; MASLOV, N.A.,red.; USPENSKIY, V.V.,red.; CHERNYAK, M.Ye.,red.; SHASS, M.Ye.,red.; KUTSENOVA, A.A., red. izd-va,; TEYYERMAN, T.M., tekhn. red.

[Material resources in building; determination and use of norms of material consumption] Material'nye resursy v stroitel'stve; metodika opredeleniia norm raskhoda materialov, dinamika ikh ispol'zovaniia. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1958. 80 p. (MIRA 11:12)
(Building materials)

SEMENOV, I. Ya.; DUKEL'SKIY, D.S., red.; IL'IN, V.M., red.; MASLOV, N.A., red.; MALYUGIN, V.I., red.; USPENSKIY, V.V., red.; CHERNYAK, M.Ya., red.; SHASS, M.Ye., red.; LAGUTINA, I.M., tekhn. red.; EL'KINA, E.M., tekhn. red.

[Working capital of the construction industry] Oborotnye sredstva v stroitel'stve. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1958. 107 p. (MIRA 11:12)
(Construction industry)

SKOBLOV, Dmitriy Alekseyevich; BENENSON, G.M., red.; UL'IN, V.M., red.; MALYUGIN, V.I., red.; MASLOV, N.A., red.; USPENSKIY, V.V., red.; CHERNYAK, M.Ya., red.; SHASS, M.Ye., red.; MORSKOY, K.L., red. izd-va; TEMKINA, Ye.L., tekhn.red.

[Lowering the expenditure of wood in building] Snizhenie raskhoda drevesiny v stroitel'stve. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 45 p. (MIRA 12:12)
(Building materials) (Building, Wooden)

GALKIN, Il'ya Grigor'yevich, kand.tekhn.nauk; USPENSKIY, V.V., red.; IL'IN, V.M., red.; MALYUGIN, V.I., red.; MASLOV, N.A., red.; CHERNYAK, M.Ya., red.; SHASS, M.Ye., red.; TARAYEVA, Ye.K., red.izd-va; STEPANOVA, E.S., tekhn.red.

[Rhythmic work in the construction industry] Ritmichnost' v stroitel'stve. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 63 p. (MIRA 12:5)
(Construction industry)

D'YACHKOV, Mikhail Fedorovich; LEYKIN, B.P., red.; IL'IN, V.M., red.; MALYUGIN, V.I., red.; MASLOV, N.A., red.; USPENSKIY, V.V., red.; CHERNYAK, M.Ya., red.; SHASS, M.Ye., red.; MORSKOY, K.L., red. izd-va; TEMKINA, Ye.L., tekhn.red.

[Analysis of the administrative operations of contract building organizations; based on reports] Analiz khoziaistvennoi deiatel'nosti podriadnykh stroitel'nykh organizatsii; po dannym otchetnosti. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam. 1960. 107 p. (MIRA 13:7)
(Construction industry)

CHERNYAK, N.

International Symposium on the Structure and Functions of Erythrocytes in Berlin (German Democratic Republic) Vop. Med. khim. 11 no.2:106-109 Mr-Ap '65.

(MIRA 18:10)

CHERNYAK, N. A.

"Investigation of phase-differential flitering systems." Min Communications USSR. Leningrad Electrical Engineering Inst of Communications imeni Professor Bonch-Bruyevich. Leningrad, 1956. (Dissertation for the Degree of Candidate in Technical Science).

SO: Knizhnaya letopis', No. 16, 1956

CHERNYAK, N.A.

9(8) PHASE I BOOK EXPLOITATION SOV/3186

Shteyn, Boris Ben'yaminovich, and Nina Abramovna Chernyak

Odnopolosnaya modulyatsiya s pomoshch'yu fazovykh skhem (Single-Band Modulation by Means of Phase-Shifting Circuits) Moscow, Svyaz'izdat, 1959. 163 p. Errata slip inserted. 7,000 copies printed.

Resp. Ed.: V.M. Rozov; Tech. Ed.: S.F. Karabilova; Ed.: L.I. Vengrenyuk.

PURPOSE: This book is intended for specialists in the field of radio and wire communications.

COVERAGE: This book is devoted to analysis of several methods of shaping single-band signals by means of phase-shifting networks. The authors investigate the principal possibilities of separating a single side-band and present a quantitative evaluation of suppression of the second side-band. The theory of wide-band RC and LC phase-shifting devices is discussed in detail and a detailed engineering calculation of such devices is presented. Considerable experimental material which can be used in designing systems with phase networks is included in the book. In writing this book the authors drew from the work conducted at

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the MEIS and the NIITS. They also investigated a series of problems connected with the analysis of properties, with methods of developing and using multiphase frequency conversion systems in radio and in wire communication, and broadcasting techniques. Ch. I. of the book was written jointly by the authors, ch. II and III were written by B.B. Shteyn and ch. IV by N.A. Chernyak. The authors thank V.M. Rozov, Candidate of Technical Sciences, for his help in editing the book. There are 28 references: 19 Soviet (including 3 translations) and 9 English

TABLE OF CONTENTS:

Single-Band Modulation (Cont.) SOV/3186

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Single-Band Modulation (Cont.) SOV/3186

AVAILABLE: Library of Congress

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L 31987-65 EWT(d)/EEC-4 Pac-4

ACCESSION NR:

AUTHOR: Chernyak, N. A.; Azarkh, I. [illegible]

TITLE: New equipment for the transmission [illegible] channels

SOURCE: Elektrosvyaz', no. 11, 1964,

TOPIC TAGS: radio broadcasting, multichannel [illegible] system

[illegible] The article describes [illegible]

channels of high multi-channel system [illegible]

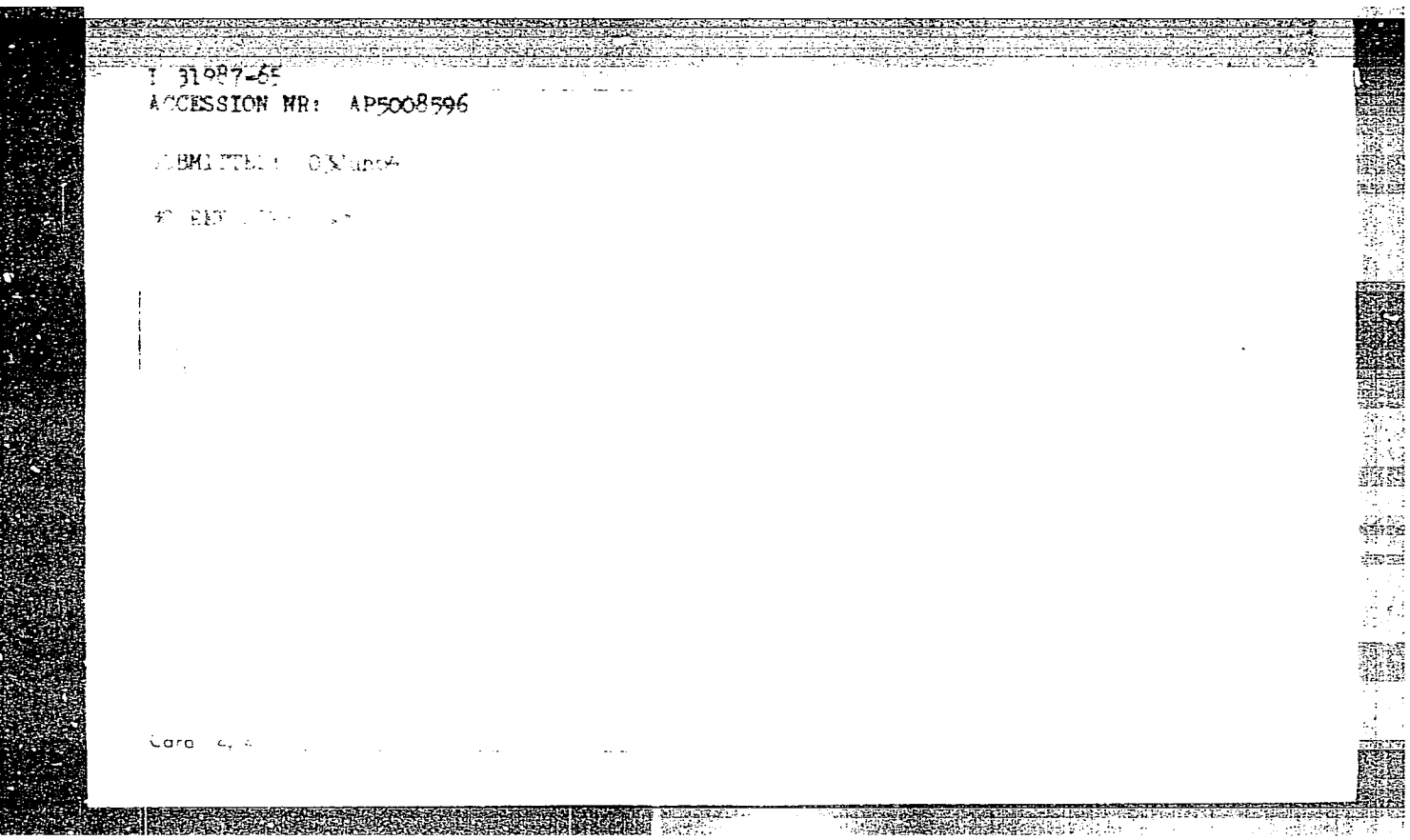
systems based on the fundamental pr[illegible]

[illegible] the first [illegible]

[illegible] covers the [illegible]

[illegible] channel covers the 50-6,400 c/s [illegible]

and permits (among other things) the [illegible]

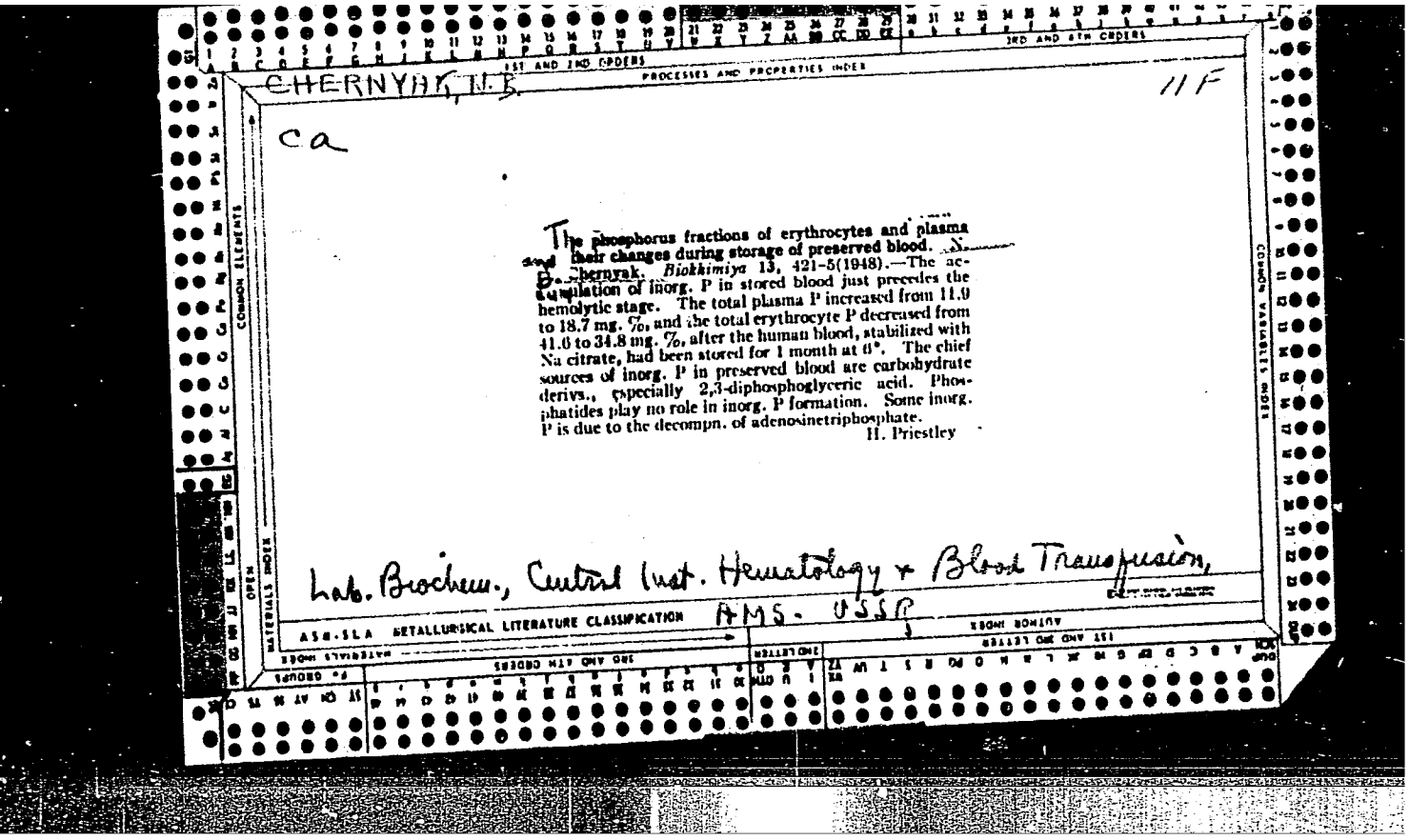


T 31987-65
ACCESSION NR: AP5008596

CHERNYAK, N. B. Cand. Biolog. Sci.

Dissertation: "Phosphorus Fractions of Enythrocytes and Plasm and their Modifications During Storage of Preserved Blood." Inst of Hematology and Blood Transfusion, Acad Med Sci USSR, 19 Dec 47.

SO: Vechernyaya Moskva, Dec, 1947 (Project #17836)



CHERNYAK, V. B.

11F

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The phosphorus fractions of erythrocytes and plasma and their changes during storage of preserved blood. S. B. Chernyak. *Biokhimiya* 13, 421-5(1948).—The accumulation of inorg. P in stored blood just precedes the hemolytic stage. The total plasma P increased from 11.9 to 18.7 mg. %, and the total erythrocyte P decreased from 41.0 to 34.8 mg. %, after the human blood, stabilized with Na citrate, had been stored for 1 month at 0°. The chief sources of inorg. P in preserved blood are carbohydrate derivs., especially 2,3-diphosphoglyceric acid. Phosphatides play no role in inorg. P formation. Some inorg. P is due to the decompn. of adenosinetriphosphate.
H. Priestley

Lab. Biochem., Central Inst. Hematology & Blood Transfusion, AMS. USSR

USSR/Medicine - Blood Transfusion 1 May 52

"The Biological Value of Blood Preserved Under Combined Addition of Glucose and Sucrose," N. B. Chernyak, P. I. Pokrovskiy, N. N. Abezgauz, /Cen/ Inst of Hematol and Blood Transfusion

"Dok Ak Nauk SSSR" Vol LXXXIV, No 1, pp 109-112

Glucose serves as a nutrient for erythrocytes in preserved blood, but increases their vol (a phenomenon which leads to hemolysis). Sucrose does not act as a nutrient, but counteracts the harmful effect of glucose by preserving the size and shape of erythrocytes. Expts showed that addn of both glucose and sucrose to citrate used for 224T55

preservation of blood delays hemolysis by a period of 10-15 days as compared with other hydrocarbon preservatives. In testing the quality of blood, the deg of hidden hemolysis (selective agglutination with anti-M and anti-N sera), bilirubin, iron, serum protein, hemoglobin, and erythrocyte number were detd.

224T55

CHERNYAK, N.B.

CHERNYAK, N.B.

(3)

The participation of cozymase in the formation of 2,3-diphosphoglyceric acid. N. B. Chernyak (Central Inst. Hematology Blood Transfusion, Ministry of Health, U.S.S.R., Moscow). *Biokhimiya* 19, 50-7(1954).—In the hemolyzates of human erythrocytes 2,3-diphosphoglyceric acid (I) is formed. Direct phosphorylation of 3-phosphoglyceric acid at the expense of the labile groups of adenosinetriphosphate (ATP) results in the formation of a minute quantity of I. In the hemolyzate of human erythrocytes the phosphorylation reaction occurs in the absence of ATP and utilizes mineral P in the presence of cozymase. It results in the formation of I. In I formation phosphoglyceric aldehyde is the basic substrate.

B. S. Levine

CHERNYAK, N.B.

USSR.

Variations in amino-acid content of preserved blood. N. B. Chernyak and M. B. Sventsitskaya (Central Inst. Hematol. and Blood Transfusion, Moscow). *Byull. Eksptl. Biol. i Med.* 38, No. 9, 32-6(1954).—With the aid of chromatograms it was possible to establish the presence and relative amts. in plasma and erythrocytes of the following amino acids: aspartic, alanine, cysteine, histidine, glycine, methionine, leucine, glutamic, norleucine, proline, tyrosine, tryptophan, valine, serine. The amts. of these acids in plasma are insignificant but they are larger in erythrocytes. Most of the amino acids increase in plasma after standing 10–15 days, decrease during the next 10 days, increase again during the following days, and are substantially decreased after 35 days. An exception is glutamic acid which is increased after 35 days. The behavior of the amino acids in erythrocytes is somewhat different during the test period but at its end all the acids are decreased as in the case of plasma.

A. S. Mirkin

CHERNYAK, N.B.

Study on respiration and glycolysis in leukocytes [with summary in English]. Vop.med.khim. 3 no.3:218-227 My-Je '57. (MLRA 10:8)

1. Biokhimicheskaya laboratoriya TSentral'nogo ordena Lenina instituta gematologii i perelivaniya krovi Ministerstva zdravookhraneniya SSSR, Moskva

(LEUKOCYTES, metab.
glycolysis, resp. & oxidative phosphorylation (Rus))
(CARBOHYDRATES, metab.
glycolysis in leukocytes (Rus))

AUTHOR: Chernyak, N. B.

20-118-5-44/59

TITLE: Oxidative and Glycolytic Phosphorylation in Leucocytes (Okislitel'noye i glikoliticheskoye fosforilirovaniye v leykotsitakh)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp. 1004-1006 (USSR)

ABSTRACT: The type of metabolism of the leucocytes has not yet been definitely determined. Data in publications on this subject are contradictory (references 1, 2). It has been proved that the white blood cells consume oxygen and, as well conduct glycolysis. The latter may proceed on aerobic and anaerobic conditions. Furthermore it was observed that the respiration of the leucocytes is suppressed by addition of glucose (references 3,4). This latter phenomena (the reverse Paster /Pasteur/-Effect) is characteristic for virulent tumors (reference 5) and some other tissues. In order to understand the fundamental processes of the vital activity of these cells the principal process of the energy exchange of the leucocytes must be cleared. The solution of this question could

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also contribute to the problem of favorable conditions on which it is possible to keep alive leucocytes when separated from the organism. This has recently become important as white blood cell suspensions are used intransfusions in the case of leucopenia (lack of white blood cells) (reference 6). The combined phosphorylation has been examined by the application of radioactive phosphorus P^{32}. The inclusion of P^{32} in the adenosintriphosphorus acid (ATPh) of the leucocytes at an incubation in an oxygen atmosphere has been observed before (reference 3). The aërobic glycosis taking place, however, did not yield any sufficient conclusion as a consequence of which processes ATPh is formed. P^{32} was also taken in by ATPh under anaërobic conditions. (reference 4). In order to jugde the inter-relations of the respiration as well as of the anaërobic and aërobic glycolysis the resynthesis-values and the velocities of renewal of the ATPh need be compared for each of these single processes. For this purpose experiments with a toxic monoiodo-acetic acid (JAC), which eliminates the glycolysis, and with cyanide - a poison, which suppresses respiration - were carried out. The experiments were made on whole leucocytes and on homogenates. The incubation lasted for 30-40 minutes at 37°C. The results apply to 1 ml of leucocytes (table 1). With whole leucocytes and in homogenates differences have been observed according to the suppression of the

glycolysis or the respiration. At experiments with cyanide, which suppresses respiration to a large extent, the combined phosphorization takes place much more intensively than with samples with JAC in spite of a substance present for respiration and of a vigorous consumption of oxygen. The experiments of determination of the intracellular ATPh and of inorganic phosphate (table 2) yielded the most transparent results. The elimination of the glycolysis decreases rapidly the velocity of metabolism, where its content decreases considerably. A partial suppression of the respiration by cyanide leads to a smaller decomposition of ATPh than in samples with JAC in which case the ATPh-metabolism accelerates. On anaerobic conditions the renewal of all ATPh which was in the cells has been observed in some experiments. In this case, the values of the relative activity of the ATPh and of adenosine diphosphoric acid sometimes exceeded 100 per cent. This is apparently connected with the fact that the marking in the inorganic phosphate was diluted as a result of the clearage of various phosphorus-containing organic compounds during incubation. From this it can be concluded that the main process of metabolism, which leads to the formation of the

energy-rich compounds in the leucocytes cells, is the glycolysis. The oxydative metabolism in this respect is of inferior importance in leucocytes.
There are 2 tables, and 8 references, 6 of which are Soviet.

ASSOCIATION: Tsentral'nyy institut gematologii i perelivaniya krovi (Central Institute for Hematology and Blood-Transfusion)

PRESENTED: August 7, 1957, by A. I. Oparin, Academician.

SUBMITTED: July 30, 1957.

CHERNYAK, N.B.; GUSEYNOV, Ch.S.

Study of oxidative phosphorylation in isolated mitochondria of human blood platelets. Dokl.AN SSSR 133 no.2:476-479 Jl '60. (MIRA 13:7)

1. TSentral'nyy institut rematologii i perelivaniya krovi. Predstavleno akademikom A.I.Oparinum.
(MITOCHONDRIA) (BLOOD CELLS) (OXIDATION, PHYSIOLOGICAL)

CHERNYAK, N.B.

Energy metabolism of leukocytes. Vop.med.khim. 6 no.5:459-462 S-O '60. (MIRA 14:1)

1. Central Institute of Haematology and Blood Transfusion, Ministry of Health, Moscow.
(LEUKOCYTES) (ADENOSINE PHOSPHATES)

CHERNYAK, N.B.; SVENTSITSKAYA, M.B.; GUSEYNOV, Ch.S.

Features of the carbohydrate-phosphorus metabolism of stored thrombocytes. Probl. gemat. i perel. krovi 5 no. 9:39-45 '60. (MIRA 14:1)

(BLOOD PLATELETS) (CARBOHYDRATE METABOLISM)
(PHOSPHORUS METABOLISM)

CHERNYAK, N. B., (USSR)

"The Energy Metabolism of Human Leucocytes and Thrombocytes."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

CHERNYAK, N.B.; SVENTSITSKAYA, GUSEYNOV, Ch.S.

Energy metabolism of thrombocytes. Biul. eksp. biol. i med. 49 no.3: 51-54 Mr '60. (MIRA 14:5)

1. Iz TSentral'nogo ordena Lenina instituta gematologii i perelivaniya krovi (dir. - deystvitel'nyy chlen AMN SSSR A.A.Bagdasarov) Ministerstva zdravookhraneniya SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR S.Ye.Severinym.
(BLOOD PLATELETS)

CHERNYAK, N.B.; TOTSKAYA, A.A.

Structural characteristics and oxidative metabolism in a granular fraction isolated from human blood platelet. Vop. med. khim. 9 no.2:146-154 Mr-Ap '63. (MIRA 17:8)

1. Laboratoriya biokhimii i laboratoriya tsitologii TSentral'nogo instituta gematologii i perelivaniya krovi Ministerstva zdravookhraneniya SSSR, Moskva.

CHERNYAK, N.B.; ISAAKYAN, A.I.; TOTSKAYA, A.A.; LORIYE, Yu.I.

Some biochemical and morphological characteristics of blood platelets in Glanzman-Naegeli disease. Vop. med. khim. 11 no.4:103-105 Jl-Ag '65. (MIRA 18:8)

1. Biokhimicheskaya laboratoriya gematologicheskoy kliniki i tsitologicheskaya laboratoriya TSentral'nogo ordena Lenina instituta gematologii i perelivaniya krovi, Moskva.

CHERNYAK, N.B.; LAPTEVA, R.I.

Substrates of anaerobic metabolism of carbohydrates in human blood platelets. Vop. med. khim. 11 no.1:60-66 Ja-F '65.
(MIRA 18:10)

1. Biokhimicheskaya laboratoriya TSentral'nogo ordena Lenina instituta gematologii i perelivaniya krovi Ministerstva zdravookhraneniya SSSR, Moskva.

CHERNYAK, N.F.

POLAK, L.S.; TOPCHIYEV, A.V., akademik; CHERNYAK, N.F.

Radiolysis of heptane and some other alkanes. Dokl. AN SSSR 119 no.2:307-309 Mr '58. (MIRA 11:5)

1. Institut nefti AN SSSR.
(Heptane) (Gamma rays) (Radiochemistry)

CHERNYAK, N.G.

Case of postinfarction syndrome. Terap.arkh. no.7:94-97 Jl '62.
(MIRA 15:8)

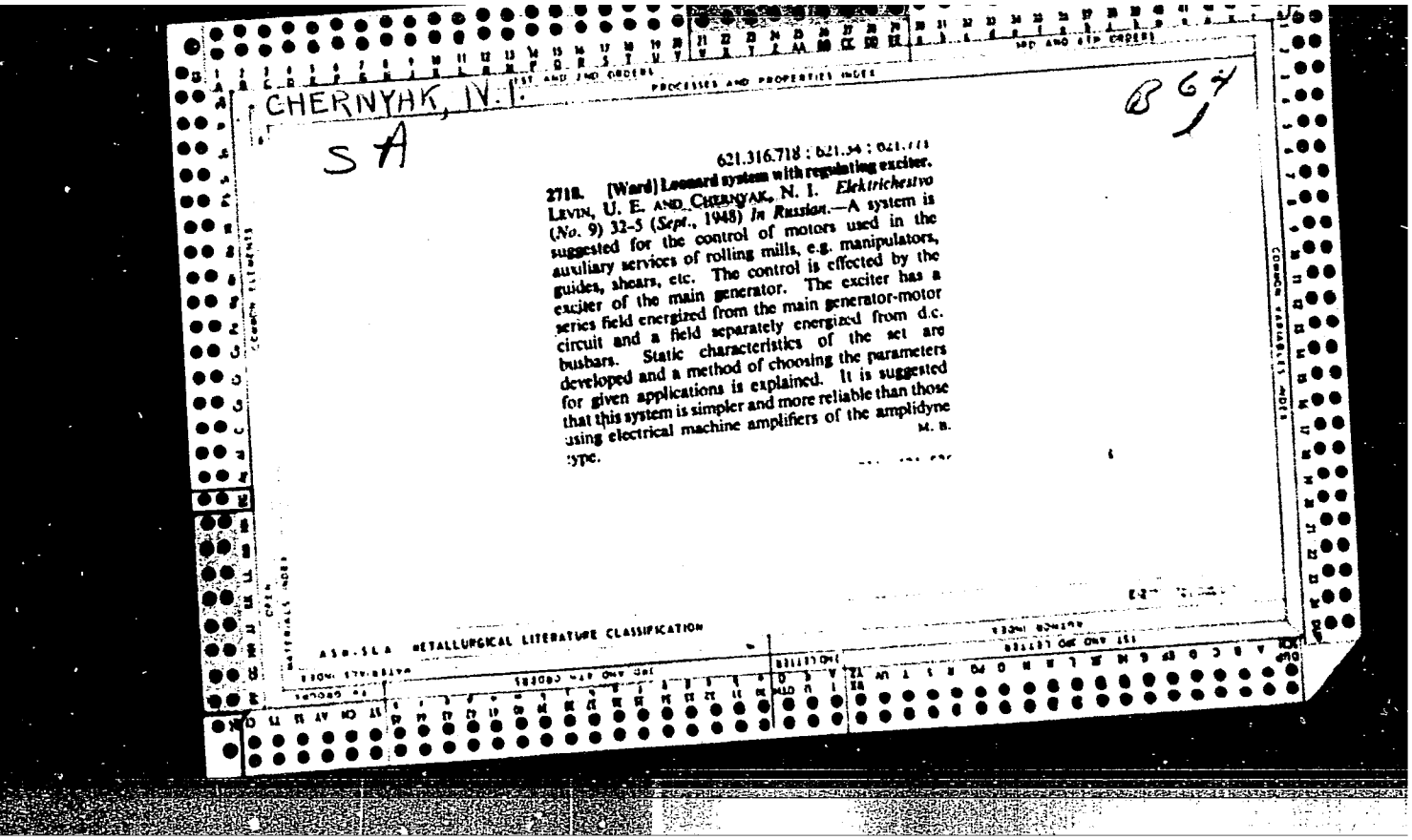
1. Iz fakul'tetskoy terapevticheskoy kliniki (dir. - deystvitel'nyy chlen AMN SSSR prof. V.N. Vinogradov) I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.

(HEART--INFARCTION) (PERICARDITIS)

CHERNYAK, N.G.

Heating unit. Stroi. truboprov. 8 no.5:35 My '63. (MIRA 16:5)

1. Glavnyy mekhanik SU-2 tresta Ukrgazneftestroy, Dnepropetrovsk.
(Engines--Cold weather operation)


CHERNYHK, IV.

SA

867

621.316.718 : 621.34 : 621.[illegible]

2718. [Ward] Leonard system with regulating exciter. LEVIN, U. E. AND CHERNYAK, N. I. *Elektrichestvo* (*No.* 9) 32-5 (*Sept.*, 1948) *In Russian.*—A system is suggested for the control of motors used in the auxiliary services of rolling mills, e.g. manipulators, guides, shears, etc. The control is effected by the exciter of the main generator. The exciter has a series field energized from the main generator-motor circuit and a field separately energized from d.c. busbars. Static characteristics of the set are developed and a method of choosing the parameters for given applications is explained. It is suggested that this system is simpler and more reliable than those using electrical machine amplifiers of the amplidyne type.

M. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AFANAS'YEV, N.N., doktor tekhnicheskikh nauk; CHERNYAK, N.I., otvetstvennyy redaktor; TITKOV, B.S., redaktor; KRYLOVSKAYA, N.S., tekhredaktor.

[Statistical theory of fatigue strength of metals] Statisticheskaia teoriia ustalostnoi prochnosti metallov. Kiev, Izd-vo Akademii nauk USSR, 1953. 127 p. [Microfilm] (MLRA 7:11)
(Metals--Fatigue)

CHERNYAK, N. I.

"Fatigue Strength of Pretensed Steel".
Sb. tr. In-ta stroit. mekhaniki AN USSR, No 18, pp 103-115, 1953

Tests conducted for fatigue (bending) of samples of normalized steel 45 and 40Kh, preliminarily deformed by tension, in contrast to well-known facts in the literature, showing only a growth of fatigue strength with increase of plastic deformation of tension, make apparent the dectease of the fatigue limit of the investigated steels during small amounts of preliminary plastic deformation. (RZhMekh, No 8, 1955)

SO: Sum No 812, 6 Feb 1956

CHERNYAK, N.I. [Cherniak, M.I.] (Kiyev)

Research at the Institute of Structural Mechanics in the field of fatigue strength of metals. Prykl. mekh. 5 no.3:241-246 '59. (MIRA 13:2)

1.Institut stroitel'noy mekhaniki AN USSR.
(Metals--Fatigue)

CHERNYAK, N.I. [Cherniak, M.I.]

Some features of stress-strain diagrams of metals in the area of small elastoplastic deformations. Dop.AN URSR no.10:1364-1368 '60.
(MIRA 13:11)

1. Institut mekhaniki AN USSR. Predstavleno akademikom AN USSR F.P.Belyankinym [Bieliankin, F.P.]
(Stresses and strains)

CHERNYAK, N.I. [Cherniak, M.I.]

Features of the variation in fatigue strength of metals as related to preliminary tension in the vicinity of small plastic deformations. Dop.AN URSR no.11:1492-1495 '60. (MIRA 13:11)

1. Institut mekhaniki AN USSR. Predstavleno akademikom AN USSR F.P. Belyankinym.

(Metals--Fatigue)

CHERNYAK, N.I. [Cherniak, M.I.]

Effect of plastic tension on fatigue characteristics of heat-resistant alloys. Dop.AN URSR no.2:173-175 '61. (MIRA 14:2)

1. Institut mekhaniki AN USSR. Predstavleno akademikom AN USSR F.P.Belyankinym.
(Heat-resistant alloys—Fatigue)

PHASE I BOOK EXPLOITATION SOV/6065

Chernyak, Nikolay Il'ich

Mekhanicheskiye svoystva stali v oblasti malykh plasticheskikh deformatsiy (Mechanical Properties of Steel in the Region of Small Plastic Deformations). Kiyev, Izd-vo AN USSR, 1962. 103 p. 2350 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut mekhaniki.

Resp. Ed.: F. P. Belyankin, Academician, Academy of Sciences UkrSSR; Scientific Ed.: G. T. Nazarenko; Tech. Ed.: M. I. Yefimova.

PURPOSE: This book is intended for scientific and engineering personnel concerned with problems of metal strength and ductility.

COVERAGE: Mechanical properties of unstrained and prestrained steel under static and variable stresses are reviewed.

Card 1/B 2

Specific features of changes in mechanical properties occurring in the region of small plastic deformation are discussed, and their significance in some theoretical and practical problems connected with determining the strength of materials and structures is analyzed. No personalities are mentioned. There are 219 references, mostly Soviet.

TABLE OF CONTENTS:

CHERNYAK, N.I.

PHASE I BOOK EXPLOITATION SOV/6025

Soveshchaniye po ustalosti metallov. 2nd., Moscow, 1960.

Tsiklicheskaya prochnost' metallov; materialy vtorogo soveshchaniya po ustalosti metallov, 24 - 27 maya 1960 g. (Cyclic Metal Strength; Materials of the Second Conference on the Fatigue of Metals, held May 24 - 27, 1960) Moscow, Izd-vo AN SSSR, 1962. 338 p. Errata slip inserted. 2800 copies printed.

Resp. Ed.: I. A. Oding, Corresponding Member of the Academy of Sciences of the USSR; Ed. of Publishing House: A. N. Chernov; Tech. Ed.: A. P. Gusova.

PURPOSE: This collection of articles is intended for scientific research workers and metallurgists.

COVERAGE: The collection contains papers presented and discussed at the second conference on fatigue of metals, which was held at the Institute of Metallurgy in May 1960. These papers deal with the nature of fatigue fracture, the mechanism of formation

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and growth of fatigue cracks, the role of plastic deformation in fatigue fracture, an accelerated method of determining fatigue strength, the plotting of fatigue diagrams, and various fatigue test methods. New data are presented on the sensitivity of high-strength steel to stress concentration, the effect of stress concentration on the criterion of fatigue failure, the effect of the size factor on the strength of metal under cyclic loads, and results of endurance tests of various machine parts. Problems connected with cyclic metal toughness, internal friction, and the effect of corrosion media and temperature on the fatigue strength of metals are also discussed. No personalities are mentioned. Each article is accompanied by references, mostly Soviet.

TABLE OF CONTENTS:

NATURE OF FATIGUE FRACTURE

15.8510

S/653/61/000/000/048/051
I042/I242

AUTHORS: Chernyak, N.I. and Yakovlev, G.A.

TITLE: The effect of some factors on the fatigue strength of plastics

SOURCE: Plastmassy v mashinostroyenii i priborostroyenii. Pervaya resp. nauch.-tekh. konfer. po vopr. prim. plastmass v mashinostr. i priborostr., Kiev, 1959. Kiev, Gostekhizdat, 1961,530-537

TEXT : When the environment temperature was increased from -60 to 160°C the endurance limit of the samples at 10^7 cycles decreased from 8.4 to 2 kg/mm^2. The temperature of the samples increased both with the frequency and amplitude of the applied load. When the stress frequency was increased from 240 to 1400 rpm the endurance limit at 10^7 cycles decreased by 60%. When the average stress was increased

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S/653/61/000/000/048/051
I042/I242

The effect of some factors ...

there was a rather regular decrease of the amplitude of variable stresses on flexing and on torsion. The fatigue tests of several plastics are described and the results listed. The effect of stress concentration is discussed. There are 3 figures and 4 tables.

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S/124/63/000/001/073/080
D234/D308

AUTHOR: Chernyak, N.I.

TITLE: Change of fatigue strength of steel due to preliminary plastic deformation

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 1, 1963, 76-77, abstract 1V592 (In collection: Tsiklich. prochnost' metallov. M., AN SSSR, 1962, 48-53)

TEXT: Using smooth specimens of 45, 40X (40Kh) and 12XH 3A (12KhN3A) steels in bending with rotation, also prismatic specimens of 15XCHД (15KhSND) steel in plane sign-changing bending, the author investigated the effect of preliminary plastic elongation from 0.5 to 25% on the variation of relative secondary fatigue limits. Deformed specimens were not subjected to additional mechanical treatment. For all 4 kinds of steel the author has established the same character of the effect of plastic deformation ε on these limits, which first decrease in comparison with the initial state by 10% (40 and 12KhN3A) and by 25% (15KhSND) when ε reaches 1.5 - 2%. With its

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Change of fatigue ...

further increase they increase up to the initial level (ε = 10%, for 45 steel) or even higher (12KhN3A, ε = 20%). The relative fatigue limit for 40Kh is minimum (80%) at ε = 10% and then increases to 90% at ε = 25%. An attempt is made to explain the failure of cyclic strength at low degrees of plastic deformation on the basis of a similar dependence of theoretical strength on dislocation density, taking into account the variation of residual stresses of the first kind and appearance of residual microstresses of the second kind.

[Abstracter's note: Complete translation]

Card 2/2

CHERNYAK, N.I. [Cherniak, M.I.]; GAVRILOV, D.A. [Havrylov, D.O.]; MANDEL', V.S.

Effect of metallurgical defects on the strength of 3Kh13 steel. Prykl. mekh. 10 no.4:407-415 '64. (MIRA 17:10)

1. Institut mekhaniki AN UkrSSR.

GORB, M.L. (Kiyev); PELEPELIN, V.M. (Kiyev); CHERNYAK, N.I. (Kiyev)

Determining the radial pressure of a specimen under conditions of a nonuniform volumetric pressure. Prikl. mekh. 1 no.10: 87-92 '65. (MIRA 18:12)

1. Institut mekhaniki AN UkrSSR. Submitted March 29, 1965.

CHERNYAK, N.I. (Kiyev); BASTUN, V.N. (Kiyev)

Effect of the anisotropy of steel on the aspect of yield surface. Prikl. mekh. 1 no.12:57-64 '65. (MIRA 19:1)

1. Institut mekhaniki AN UkrSSR. Submitted April 27, 1965.

L 06369-67 EWA(h)/EWP(w)/EWP(t)/ETI IJP(c) JD/DJ

ACC NR: AP6027489 (A) SOURCE CODE: UR/0418/66/000/003/0063/0066

AUTHOR: Bezruchko, I. V. (Engineer); Golovinskaya, T. M. (Engineer); Gorb, M. L. (Engineer); Panchenko, N. P. (Engineer); Chernenko, V. S. (Engineer); Chernyak, N. I. (Engineer)

ORG: None

TITLE: Contact fatigue strength of ShKh15 bearing steel

SOURCE: Tekhnologiya i organizatsiya proizvodstva, no. 3, 1966, 63-66

TOPIC TAGS: fatigue test, fatigue strength, steel microstructure, x-ray analysis, BEARING STEEL / ShKh15 BEARING STEEL

ABSTRACT: The authors describe a study carried out at the Institute of Mechanics AN UkrSSR in cooperation with the First State Bearing Plant on the contact fatigue strength of ShKh15 bearing steel. The basic criterion in evaluating polishing conditions is taken as the physical state of the layer structure and depth of structural variation. Mechanical methods for testing contact fatigue strength and for measuring microhardness were used together with metallophysical methods and microstructural and x-ray structural analysis. Steel specimens used for these tests were heat treated after finish machining. The following heat treatment procedures were used: quenching at 850°C in 40-50°C oil, cold processing with cooling to -30°C and tempering at 150-160°C. These conditions give specimens with a hardness of HRC 62-64. After heat treatment the specimens were polished under various conditions. The specimens were divided into three groups according to the amount of metal removed: 0.1 mm for the first group; 0.15 mm for the second and 0.25 mm for the third. Depth of structural

UDC: 620.17:669.14

Card 1/2

L 06369-67

ACC NR: AP6027489

variation after polishing for the various groups is the following: 10-30 μ for the first group, 150-170 μ for the second and 220-250 μ for the third. Microstructural analysis for the first group shows that structural variation is not significant. The microhardness of these specimens is 950-1000 kg/mm^2. X-ray analysis for this group of specimens shows that variations due to polishing and honing are localized in a layer 10-30 μ thick. Slight deformation and elongation of the crystal lattice of the α-phase is observed in this layer. Depth of variation for the second group of specimens is 150-170 μ. This is substantiated by microhardness measurement data and microstructural and x-ray analysis. Depth of variation for the third group reaches 250 μ, these variations being similar to those of the second group. The unetched surfaces of the specimens in the first and second groups examined under an electron microscope show scaly tearing and deep scratches caused by polishing. After etching, secondary solid solutions are observed on individual surfaces oriented in the direction of polishing. A graph is given showing the contact fatigue strength of all three groups. The results show that contact fatigue limit for the second and third groups is identical (150-160 kg/mm^2), differing from the first group where maximum contact strength is 200 kg/mm^2. Pit depth for the first group under staining does not exceed 300 μ, reaching 600-700 μ for the second and third groups. All groups show large-scale microfocal scaling after testing observed on the electron microscope. The authors recommend that polishing procedures be selected which have the minimum effect on the structural variation of the surface layer of ShKh15 steel. Orig. art. has: 4 figures.

SUB CODE: 11/ SUBM DATE: None

Card 2/2

L 10326-67 EWP(k)/EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6020918 SOURCE CODE: UR/0369/66/002/002/0204/0208

AUTHORS: Bezruchko, I. V.; Golovinskaya, T. M.; Gorb, M. L.; Panchenko, N. P.; Chernenko, V. S.; Chernyak, N. I.

ORG: Mechanics Institute of the AN UkrSSR, Kiev (Institut mekhaniki AN UkrSSR); First GPZ, Moscow (Pervyy GPZ)

TITLE: Effects of the physical condition of the surface layer, formed during grinding, on the contact wear resistance of steel ShKh15

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 2, 1966, 204-208

TOPIC TAGS: surface fatigue, surface property, metal friction, steel property, grinding wheel, electron microscope, steel, x-ray equipment/ ShKh15 steel, EB60SM2K grinding wheel, E46SM2K grinding wheel, MIM-8M microscope, UEM-100 electron microscope, UPS-50I x-ray equipment

ABSTRACT: The effects of the structure and depth of structural gradients on the surface fatigue of ShKh15 steel were investigated. Thirty-five millimeter diameter x 10-mm thick disc-shaped specimens were heat-treated and ground using wheel EB60SM2K and finish-ground with wheel E46SM2K. Three grinding regimes (0.005 mm/rev, 0.15 mm and 0.25 mm) were used to produce structural changes in layers of 10--20, 150--160, and 220--250 micron respectively. After lapping to an 11--12 class finish, surface fatigue tests were performed at 1750 rpm using methods described by M. A. Puzanov

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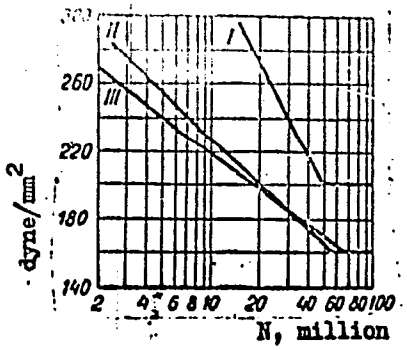
L 10326-67

ACC NR: AP6020918

(Sb. Povysheniye iznosostoykosti detaley mashin, Izd. AN UkrSSR, 1956, No. 22). Microstructural studies of the surface layers were performed using optical and electron microscopes (MIM-6M and UEM-100 respectively) and x-ray equipment (UPS-50I). A discussion of the structural changes for the different grinding regimes is included, and the experimental results are summarized in Fig. 1.

Fig. 1. Surface fatigue of group I, II, and III specimens (corresponding to structural changes in layers of 10--20, 150--160, and 220--250 micron respectively)



Orig. art. has: 5 figures.

SUB CODE: 11, 13/ SUBM DATE: 17Jul65/ ORIG REF: 003

Card 2/2 KR

CHERNYAK, N.I.

Brief geological history of the Tajik Depression during the Tertiary period. Geol.sbor. [Lvov] no.1:116-127 '54. (MLRA 10:1)

1. Ukrainskiy Vsesoyuznyy nauchno-issledovatel'skiy gologo-razvedochnyy neftyanoy institut, L'vov.
(Tajik Depression--Geology, Stratigraphic)

CHERNYAK, N.I.

KUL'CHITSKIY, Ya.O.; CHERNYAK, N.I.

Some observations on diapirism within the limits of the Carpathian piedmont frontal fault. Geol.sbor.[Lvov] no.2/3:95-103 '56.
(MLRA 10:3)

1. Ukrainskiy vsesoyuznyy nauchno-issledovatel'skiy geolgo-razvedochnyy neftyanoy institut L'vov.
(Carpathian Mountain region--Folds (Geology))

CHERNYAK, M.I.

Remarks on the division of the Paleogene in the northern part of the Soviet Carpathians. Geol. sbor. [Lvov] no.4:23-32 '57.
(MIRA 13:2)

1.Ukrainskoye otdeleniye Vsesoyuznogo nauchno-issledovatel'skogo geologorazvedochnogo neftyanogo instituta, L'vov.
(Carpathian Mountains--Geology, Stratigraphic)

CHERNYAK, N.I.; STOLYAR, L.N.; ZHILOVSKIY, N.I.

Materials on the stratigraphy and lithology of Paleogene deposits in the central synclinal zone of the Carpathians. Trudy VNIGNI no.12: 61-68 '58. (MIRA 12:3)
(Tereblya Valley--Geology, Stratigraphic)

BOGAYETS, A.T. [Bohaiets', O.T.]; VOLOSHINA, A.M. [Voloshyna, H.M.];
CHERNYAK, N.I. [Cherniak, N.IU.]

Recent data on Cretaceous deposits of the Berdyanskaya Spit.
Dop. AN URSR no.2:230-233 '62. (MIRA 15:2)

1. Ukrainskiy nauchno-issledovatel'skiy gornorudnyy institut.
Predstavleno akademikom AN USSR V.G.Bondarchukom [Bondarchuk, V.H.].
(Berdyanskaya Spit—Geology, Stratigraphic)

CHERNYAK, N.I., kand. geol.-mineral. nauk; KUTOVAYA, D.V.; BORTNITSKAYA, V.M.

Second All-Union Conference on the problems of fractured reservoir rocks. Neft. i gaz. prom. no.2:71-72 Ap-Je '63. (MIRA 17:11)

1. Ukrainskiy nauchno issledovatel'skiy geologorazvedochnyy institut.

CHERNYAK, N.I.

History of the development of the southern margin of the Russian Platform. Trudy UkrNIGRI no.5:309-313 '63.
(MIRA 18:3)

Chernyak, N. Kh.

CHERNYAK, N.Kh.; ZEMEROV, I.V.; NAUMOV, I.S.; SHMELEV, I.P.; NESTEROV, L.Ye. STEPANOV, P.I.

Improve and develop communication facilities in the economic regions. Vest.sviazi 17 no.8:15-18 Ag '57. (MIRA 10:10)

1.Nachal'nik otdela elektrosvyazi Sverdlovskogo oblastnogo upravleniya (for Chernyak). 2. Nachal'nik Sverdlovskogo telegrafa (for Zemerov) 3.Nachal'nik Sverdlovskoy mezhdugorodnoy telefonnoy stantsii (for Klebanov). 4.Zamestitel' nachal'nika Sverdlovskogo upravleniya svyazi (for Naumov). 5.Nachal'nik otdela pochtovoy svyazi Sverdlovskogo upravleniya svyazi (for Shmelev). 6.Nachal'nik Sverdlovskoy direktsii radiotranslyatsionnykh setey (for Nesterov). 7.Nachal'nik Ordzhonikidzevskoy kontory svyazi g. Sverdlovska (for Stepanov).

(Sverdlovsk--Telecommunication--Congresses)

N. V. Chernyak

SEMENOV, P. I. and N. V. CHERNYAK.

Aviatsionnye topliva, masla, okhlazhdaiushchie zhidosti. Leningrad, Leningradskaia krasnoznamennaia venno-vozdushnaia akademiia, 1948.
Title tr.: Aviation fuels, oils and coolants.

NCF

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

CHERNYAK, N. V.

KOGAN, L.M.; BURMAKIN, N.M.; IGNATOVA, N.P.; CHERNYAK, N.V.

Formation of octachloro -1,3-pentadiene. Zhur.prikl.khim. 31 no.3:507-508 Mr '58. (MIRA 11:4)
(Pentadiene)

SOV/153-58-5-21/28

5(3)

AUTHORS: Kogan, L. M., Burmakin, N. M., Chernyak, N. V.

TITLE: Production of Hexachloro Butadiene (Polucheniye geksakhlorbutadiyena)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 5, pp 126-130 (USSR)

ABSTRACT: Hexachloro butadiene-1,3 ($CCl_2=CCl-CCl=CCl_2$) is a chemically rather inert substance which behaves as a saturated compound since its double bonds are screened off by chlorine atoms (Refs 1, 3, 4). Most of its reactions are connected with fluorization. Its constants and fields of application are recalled. The production of hexachloro butadiene by thermal chlorination of polychloro butanes (Ref 2) is the most agreeable. Although the last stages of this process supply high yields of the final product it is devaluated by the multistage and complicated production of the initial substances. The task of the present paper was the determination of conditions not having those deficiencies. First of all, the reaction temperature was to be decreased as it was close to the upper limit of the usability of nickel which is the only con-

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Production of Hexachloro Butadiene

struction material possible in this case. This aim was accomplished by the chemical inertness of hexachloro butadiene which can remain in the reaction zone for a longer period without suffering any changes. The considerable usual chlorine excess hitherto made use of was decreased by 30%. The reaction temperature amounted to 350-425°; parallel experiments were carried out at 475°. Table 1 gives the results obtained. They tend to show the successive production of hexachloro butadiene at 350-425°. The high sensitivity of the yield to the degree of the chlorination of butane was another deficiency to be removed. This was accomplished by the chlorination on kieselguhr. 3) Finally, the authors proved that the production of hexachloro butadiene takes place during the reaction between chlorine and the product of a short chlorination of butane by trichloro butane. The process takes place on kieselguhr at 350-425° with a yield of 70%. There are 3 tables and 21 references, 8 of which are Soviet.

ASSOCIATION: Nauchnyy institut po udobreniyam i insektofungisidam i Moskovskiy institut tonkoy khimicheskoy tekhnologii, Kafedra tekhnologii osnovnogo organicheskogo sinteza (Scientific Institute

SOV/153-58-5-21/28

Production of Hexachloro Butadiene

for Fertilizers and Insectofungicides and Moscow Institute for Fine Chemical Technology, Chair of the Technology of Organic Basic Synthesis)

SUBMITTED: January 6, 1958

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CHERNYAK, N V.

AUTHORS: Kogan, L. M., Burmakin, N. M., Chernyak, N.V. 79-1-6/63

TITLE: On the Chemism of the Processes of the Intense Chlorination of Pentane (O khimizme protsessov glubokogo khlorirovaniya pentana)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 1, pp. 27-30 (USSR)

ABSTRACT: The chlorination of normal butane to the mono- and di-derivatives was investigated by many scientists. But there exist fewer works on the synthseis of polychloropentanes with more than two of chlorine atoms in the molecule. The process of intense chlorination of pentane was phototechnically realized in a flowing system in the center of the reaction products, hexa- and heptachloropentane. Under these conditions a considerable destruction of the molecules took place. The chlorination of these pentanes with infusorial earth and iron chloride at high temperatures led to hexachlorocyclo-pentadiene as the main product. This conversion with the formation of hexachlorocyclopentadiene, which is used as initial product for the manufacture of highly effective insecticides, may also later be used in the production of

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other important technical products. It is the task of the present paper to investigate the conversion of polychloropentanes to hexachlorocyclopentadiene. The methods employed by the authors and described in publications for the systhesis of this pentadiene led to decomposition products and an undistillable residue, which rendered the determination of the process of reaction very difficult. Therefore the conversion of the polychloropentanes was considerably changed and their chlorination performed in the presence of infusorial earth at 350°C. Thus the yield of the final product was substantially reduced, but it was possible to isolate the intermediate products. Beside hexachlorocyclopentadiene octachloropentadiene-1,3 and octachlorocyclopentene as destruction products were determined in the reaction mixture. The conversion of the polychloropentanes to hexachlorocyclopentadiene takes place according to the scheme: polychloropentane → nonachloropentane → → octachloropentadiene-1,3 → octachlorocyclopentene → → hexachlorocyclopentadiene (see formulae). This scheme of the conversion of polychloropentanes in the presence of chlorine at high temperatures practically by far deserves

On the Chemism of the Processes of the Intense Chlorination of Pentane 79-1-6/63

preference over all other schemes.

ASSOCIATION: Scientific Institute for Fertilizers and Insecticides (Nauchnyy institut po udobreniyam i insektofungisidam)

SUBMITTED: January 7, 1957

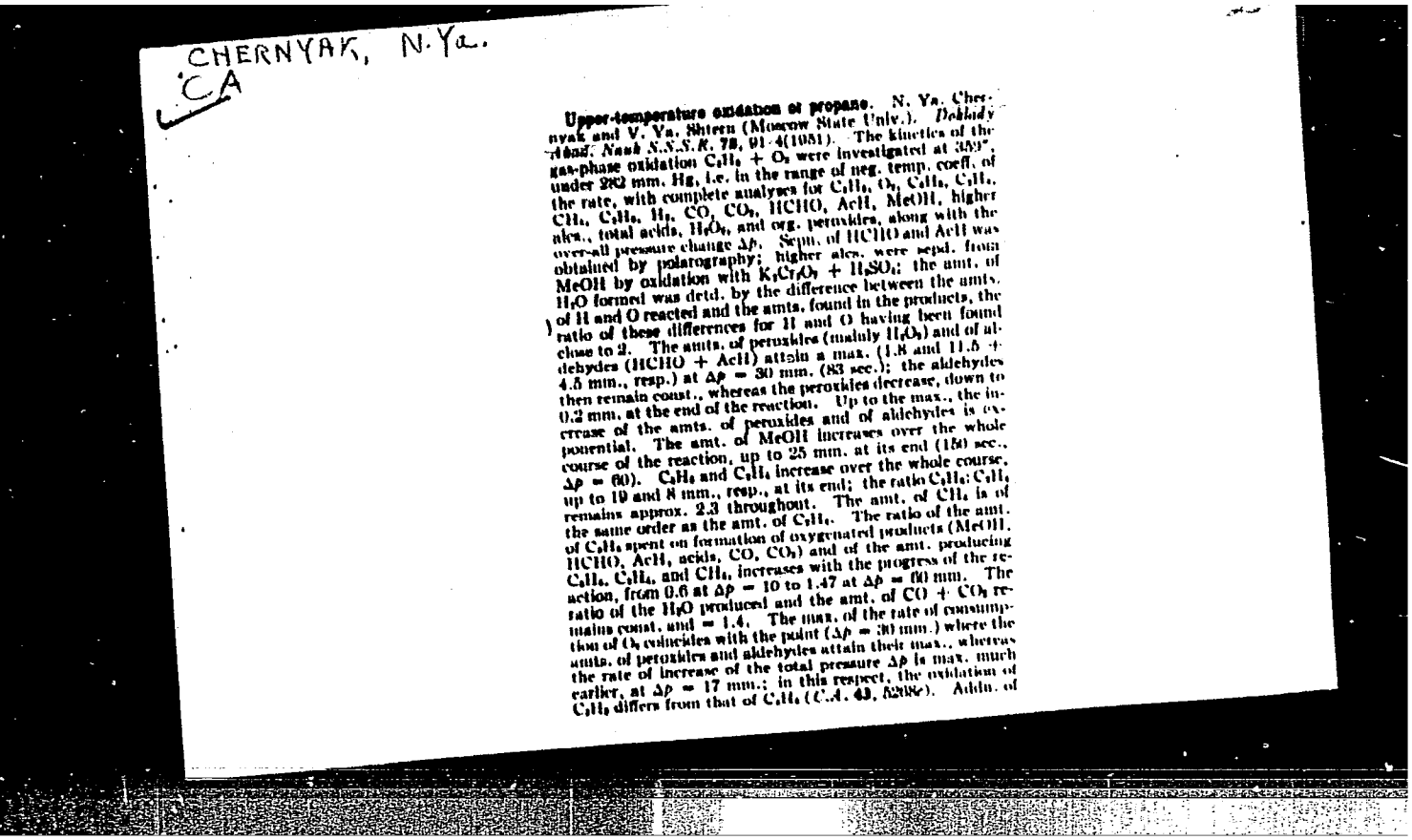
AVAILABLE: Library of Congress

Card 3/3 1. Chemistry 2. Pentane-Chlorination

KOGAN, L.M.; BURMAKIN, N.M.; IGNATOVA, N.P.; CHERNYAK, N.V.

Development of technological process in the preparation of hexachlorocyclopentadiene. [Trudy] NIUIF no.164:6-8 '59. (MIRA 15:5)

(Cyclopentadiene)



CHERNYAK, N. Ya.
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Upper-temperature oxidation of propane. N. Ya. Chernyak and V. Ya. Shteen (Moscow State Univ.). *Doklady Akad. Nauk S.S.S.R.* 78, 91-4(1951). The kinetics of the gas-phase oxidation $C_3H_8 + O_2$ were investigated at 359°, under 282 mm. Hg, i.e. in the range of neg. temp. coeff. of the rate, with complete analyses for C_3H_8, O_2, C_2H_4, C_3H_6, CH_4, C_2H_6, H_2, CO, CO_2, HCHO, AcH, MeOH, higher alcs., total acids, H_2O_2, and org. peroxides, along with the over-all pressure change Δp. Separation of HCHO and AcH was obtained by polarography; higher alcs. were separated from MeOH by oxidation with $K_2Cr_2O_7 + H_2SO_4$; the amt. of H_2O formed was detd. by the difference between the amts. of H and O reacted and the amts. found in the products, the ratio of these differences for H and O having been found close to 2. The amts. of peroxides (mainly H_2O_2) and of aldehydes (HCHO + AcH) attain a max. (1.8 and 11.5 + 4.5 mm., resp.) at Δp = 30 mm. (83 sec.); the aldehydes then remain const., whereas the peroxides decrease, down to 0.2 mm. at the end of the reaction. Up to the max., the increase of the amts. of peroxides and of aldehydes is exponential. The amt. of MeOH increases over the whole course of the reaction, up to 25 mm. at its end (180 sec., Δp = 60). C_2H_6 and C_2H_4 increase over the whole course, up to 19 and 8 mm., resp., at its end; the ratio C_2H_6:C_2H_4 remains approx. 2.3 throughout. The amt. of CH_4 is of the same order as the amt. of C_2H_6. The ratio of the amt. of C_3H_8 spent on formation of oxygenated products (MeOH, HCHO, AcH, acids, CO, CO_2) and of the amt. producing C_2H_6, C_2H_4, and CH_4, increases with the progress of the reaction, from 0.6 at Δp = 10 to 1.47 at Δp = 60 mm. The ratio of the H_2O produced and the amt. of CO + CO_2 remains const. and = 1.4. The max. of the rate of consumption of O_2 coincides with the point (Δp = 30 mm.) where the amts. of peroxides and aldehydes attain their max., whereas the rate of increase of the total pressure Δp is max. much earlier, at Δp = 17 mm.; in this respect, the oxidation of C_3H_8 differs from that of C_2H_4 (*C.A.* 43, 8288e). Addn. of

CHERNYAK, N. Ya.

Defense of Dissertations, Jan-Jul 1957, Section of Technical Sci.
Vest. AN SSSR, 1957, Vol. 27, No. 12, pp 122-123

At the Petroleum Institute.
Applications for the degree of Cand. of Tech. Sci.:

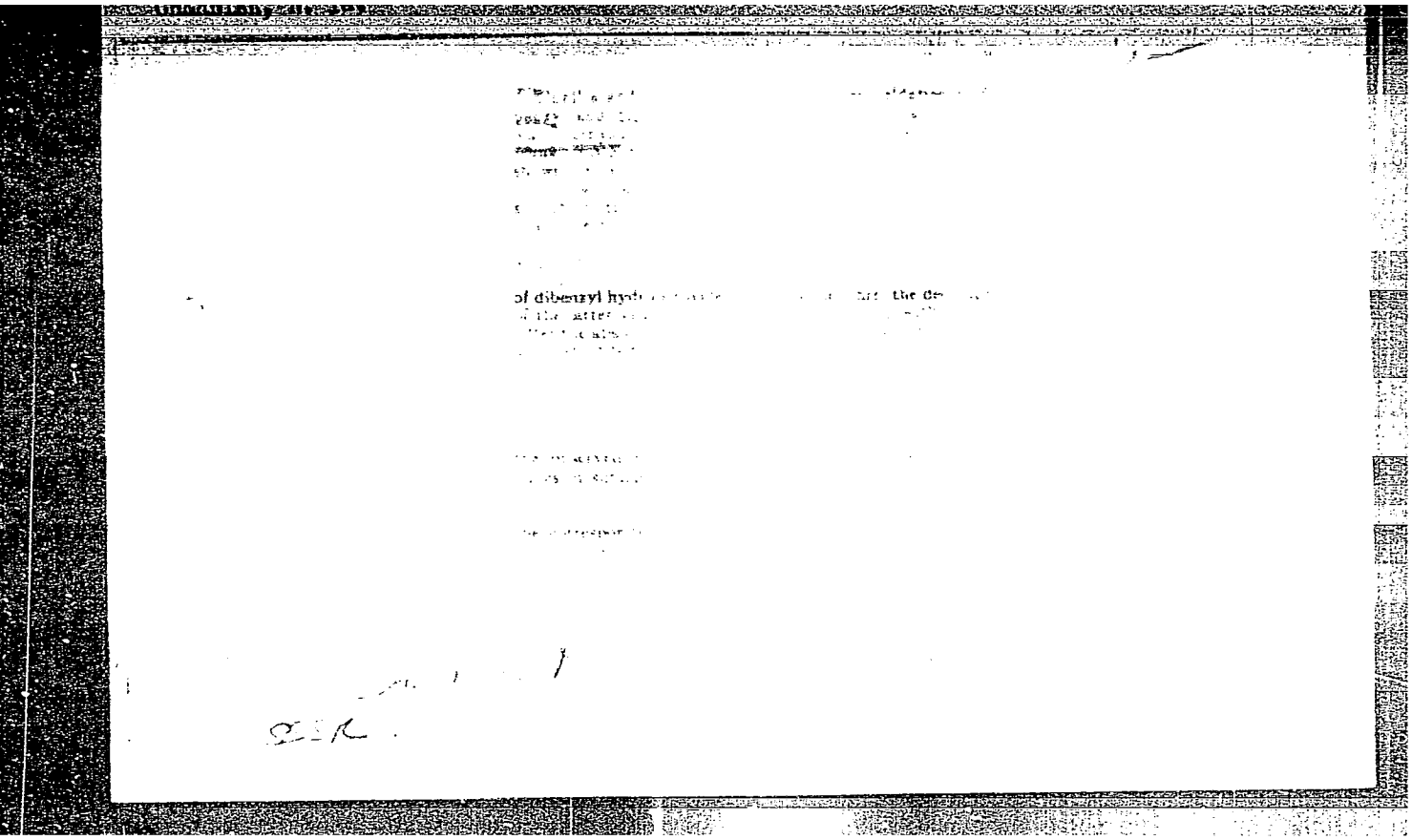
ANIYAN, V. A. - Putting into operation, utilization and repair of fountain wells.

GRIGOR'YEV, V. I. - The Prevention of the Arbitrary bending of Opening Shafts in Turbine Drilling.

SERGEYEVICH, V. I. - Investigation of the Viscosity and the Density of Deposit Water of Mineral Oil Deposits and the Binary Electrolyte Solutions in Dependence on Temperature and Pressure.

SHIMELEVICH, Yu. S. - Activation Analysis of Rocks under the Conditions of Drill Holes and their Utilization for the Determination of the Position of Mineral oil and Water-containing Deposits.

Application for the degree of Candidate of Chemical Sci: N. Ya. CHERNYAK - The kinetics and the Mechanism of the Liquid-phase oxidation of dibenzyl and "dicyclohexyl ethane. (Academy of Sciences USSR, Inst. of Petroeum.)



20-119-1-32/52

AUTHORS: Polak, L. S., Topchiyev, A. V., Member, Academy of Sciences, USSR, Chernyak, N. Ya., Kachkurova, I. Ya.

TITLE: Investigation of the Radiolysis of Hydrocarbons by Spectral Methods (Izucheniye radioliza uglevodorodov spektral'nymi metodami)

PERIODICAL: Doklady Akademii Nauk SSSR,1958,Vol.119,Nr 1,pp.117-120(USSR)

ABSTRACT: In the investigation of the radiolysis of hydrocarbons the qualitative and quantitative determination of their products in the liquid phase exhibits the greatest difficulties. In this regard the investigation of the absorption spectra in the ultraviolet and infrared range is an essential aid. In the radiolysis of the alkanes essentially a breaking of the C-H-bonds takes place, representing the process of the dehydration. The investigation of the ultraviolet absorption spectra makes it possible to ascertain the presence of conjugated dienes in the products of the radiolysis and the method of the infrared absorption spectra makes it possible to ascertain the presence of compounds with an ethylene bond (heptenes etc). Moreover several other particularities

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of the products of the radiolysis can be determined. The authors investigated the radiolysis of the alkanes under the influence of γ-radiation from devices, which use γ-rays of Co^{60} with a rated power of 1400 and 20000 curie. The absorption spectra in the ultraviolet range were taken by a "spectrovisor" with an appliance for the automatical registration of the absorption curves in the optical laboratory of the Institute for Elementary Organic Compounds of the AS USSR (Institut elementoorganicheskikh soyedineniy AN SSSR). A diagram illustrates some of the absorption curves obtained here. According to it irradiated K-hexane, heptane and octane have absorption curves similar to each other with peaks of absorption in the range of 40 - 44.10^3 cm^{-1}. The spectrum of irradiated isooctane is very similar to the spectrum of irradiated octane. The absorption observed in the irradiated alkanes in the here investigated range has to be credited to the production of conjugated dienes (and polyenes). The presence of an aromatic structure in irradiated cyclohexane cannot be doubted. The absorption curves in the ultraviolet range given here give evidence that in the radiolysis of heptane apart from other transformations also the dehydrocyclization with production of toluene is

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possible. The data obtained in the fractionated irradiation of heptane confirm and define the data obtained from the ultraviolet absorption spectra. The corresponding member of the AS USSR I. V. Obreimov made possible the photographing of the absorption spectra in the ultraviolet range and Professor S. R. Sergiyenko and M. P. Teterina took the infrared spectrum. There are 4 figures and 2 references, 2 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR
(Petroleum Institute of the AS USSR)

SUBMITTED: October 8, 1957

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20-119-2-33/60

AUTHORS: Polak, L. S., Topchiyev, A.V., Member of the Academy of Sciences, Chernyak, N. Ya.

TITLE: The Radiolysis of Heptane and Some Other Alkanes (Radioliz geptana i nekotorykh drugikh alkanov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 119, Nr 2 pp 307-310 (USSR)

ABSTRACT: The present paper is the first of a planned series of works on the basic rules and the mechanism of the radiolysis of the individual hydrocarbons of the paraffin series in liquid and solid phase on the action of γ-radiation. As radiation source served Co^{60}, with the apparatus having a rated power of 1400 and 20 000. The main experiments were carried out with N - heptane but also other individual hydrocarbons were used. The hydrocarbons were irradiated in sealed molybdenum-glass ampoules. In opening the ampoule containing the product irradiated with a certain radiation dosage the amount of

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separated gas was determined. Then the gas was analysed with respect to its content of H_2, CH_4 and other hydrocarbon gases. Besides, the ultraviolet and infrared spectra of the irradiated products were taken. A change of the temperature within the interval from -30 to + 200° has no effect on the yield and the character of the gaseous products of radiolysis. The gas separation of the irradiation stops when the irradiation is interrupted and after the rebeginning of irradiation takes the same course as before. A diagram shows the curves for the radiation-dependent changes in liquid heptane as well as for the total gas yield obtained in it as function of the γ-radiation dosage absorbed in it. At dosages of from 0 to 500.10^6 r the gas quantities formed in radiolysis, the increases of molecular weights, of specific weights and the diffraction coefficients of the liquid phase depend linearly on the dosage of radiation. The authors investigated also the influence of the number of CH_2-groups and of the relative content of CH_3-groups in a molecule on the results of radiolysis.

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The amount of methane increases with the increasing relative quantity of CH_3-groups in the hydrocarbon molecule from zero with cyclohexane to 37 % with isooctane. The weight share of the heavy residue and its diffraction coefficient increase proportionally to the dosage when the dosage is being increased. Also transheptenes, dienes and polyenes are present in the liquid irradiation product. The initial reactions of radiolysis of heptane posible in consequence of the here discussed experimental data are put down. Also the further course of the process is discussed. This paper thus proved the usefulness of methods using free radicals for some reactions of the radiolysis of alkanes as well as the fact that the alkyl radicals can accumulate in the case of an irradiation of hydrocarbons in frozen state at the temperature of 77°K. The author thanks the collaborators of the Group for Radiation Sources of the Physical-Chemical Institute imeni L. Ya. Karpov (fizikokhimicheskiy institut

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The Radiolysis of Heptane and Some Other Alkanes

im. L. Ya. Karpova) and especially L. Kh. Breger and V. B. Osipov for their collaboration. There are 3 figures, 1 table and 9 references, 4 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute, AS USSR)

SUBMITTED: October 8, 1957